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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Atomic "Submarine"

See Page 10

A SCIENCE SERVICE PUBLICATION

MEDICINE

Storms Spread Disease

► **TORNADOES** MAY provide the solution to a disease mystery that has puzzled scientists for almost a decade. And a group of health scientists are hoping now for a good tornado of the right kind and location to help them prove the solution they suspect.

The mystery concerns the distribution and spread of a fungus disease of the lungs, histoplasmosis. The disease has been present constantly in certain areas of the country and at certain spots or "land islands" within those areas. In these "land islands," the population is heavily infected with the fungus disease.

These islands suggested the possibility that if the infection is air-borne, as seemed likely, it might be carried by strong winds. And since the islands of infection were spotted here and there in the Mississippi River Valley, the region's frequent tornadoes were suspected of being the winds that spread the infection.

Available "before and after" health records have been checked against Weather

Bureau records. The percentage of persons reacting to histoplasmin, showing they had acquired the fungus infection, increased after tornadoes in certain of the "islands."

So plans are being made to use the next available and suitable tornado for a natural laboratory. A Christmas Seal grant from the National Tuberculosis Association will aid the study, being made under the direction of Dr. Carroll E. Palmer of the U. S. Public Health Service. Announcing the grant, Dr. Esmond R. Long, director of medical research of the NTA, New York, said:

"Specifications for the tornado are that it be in a histoplasmosis endemic area and cover a wide path and that local health authorities in the area be so interested in the problem that they will cooperate.

"The scientists hope that their tornado will blow only good. They have carefully eliminated destruction from the specifications."

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GEOGRAPHY

Chance Saved Columbus

► A COMBINATION of chance circumstances saved Columbus' third voyage to the new world from being a complete failure, a British geographer reports.

If Columbus' servant, Antonio Perez, had not by the merest chance climbed to the crow's nest at noon on July 31, 1498, the ship would have passed north of its destination, the continent of South America. Columbus called it a "miracle."

Prof. Arthur Davies, head of the geography department at the University College of the South West, Exeter, England, reports this version of the voyage in the American Geographical Society's *Geographical Review* (Oct.). The finding was deduced from original letters and documents.

What the servant saw far on the horizon were the peaks of three mountains on the eastern corner of Trinidad, an island off the north coast of South America.

Columbus set out from Spain with the original intention of bringing stores to colonists in Hispaniola, in the Caribbean. At the Canary Islands, Columbus suddenly decided to separate from the rest of his ships and sail south of the equator to seek South America himself. Prof. Davies suggested that Columbus learned in Madeira, before reaching the Canaries, of the Portuguese discovery of Brazil and he decided to continue the exploration.

But half way between Africa and Brazil, Columbus wrote, his ship was beset by great heat and his stores were wasting away. He decided to give up the attempt and head for Hispaniola.

On the way to meeting his other ships

his servant sighted the peaks, Prof. Davies said. Columbus named the island Trinidad, after the Holy Trinity, and explored the area. He then set his course northwest and reached Hispaniola five days later.

In 1950, Prof. Davies told the British Association for the Advancement of Science that Columbus deliberately falsified the log of his first voyage to cheat the Portuguese explorer, Ferdinand Dulmo, of the discovery of America.

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PUBLIC HEALTH

Roaches a Disease Factor If Conditions Are Right

► **THE IMPORTANCE** of sewer cockroaches as disease spreaders was described by William B. Jackson and Paul P. Maier of the Communicable Disease Center, U. S. Public Health Service, Phoenix, Ariz., at the meeting of the American Association for the Advancement of Science in Berkeley, Calif.

The government scientists stated that "the possibility that sewer cockroaches might serve as elevator mechanisms, bringing disease organisms from the underground sewer systems up to areas of human contact" prompted the study.

Experiments on the movements of American cockroaches from sewer manholes in Phoenix revealed that low winter-time temperature inhibited large-scale movement.

During the late spring, however, warmer temperatures resulted in quite different ob-

servations. The warmer weather, together with either natural or forced overpopulation, caused the roaches to emigrate en masse.

These results led the scientists to conclude that while a single roach from a sewer is of relatively little importance in the spread of disease, "extensive emigrations, such as might result when sewers become flooded, could convert cockroaches into important elevators of disease-producing bacteria and viruses."

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PSYCHOLOGY

Teen-Age Girls Seen Middle-of-Roaders

► **TEEN-AGE GIRLS** are less likely to take extreme views and more inclined to middle of the road choices than boys and men, it appears from a study reported by Norman Young of New York and Frank Mayans Jr. of Brooklyn, N. Y., at the meeting of the American Association for the Advancement of Science in Berkeley, Calif.

The adolescent girls "may have a greater tendency than males to give middle-type avoidance of the extreme responses on personality questionnaires," the scientists reported from studying responses to 1,000 Columbia University Citizenship Education Project questionnaires.

The purpose of the study was to learn whether there were any response tendencies which differentiated the sexes when dealing with responses of the type answered "Yes," "Sometimes" or "No."

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PUBLIC HEALTH

Snake Venom May Activate Malaria

► **GETTING SNAKE** poison into the system can activate latent malaria, Dr. Norman L. Corkill, health adviser to the Aden Protectorate at Mukalla, Aden, told scientists at the first International Conference on Animal Venoms held with the American Association for the Advancement of Science meeting in Berkeley, Calif.

Dr. Corkill reported on work performed while he was with the Sudan Medical Service.

It might be possible, he said, to tell whether a person has been bitten by a deadly snake or by one from a non-deadly species by examining the urine for red blood cells. This might also serve as a guide to predicting the outcome.

In communities where there is seasonal dryness, shortage of animal protein in the diet and deficiency of vitamin A, riboflavin and especially vitamin C, the victims of snakebite, particularly victims of vipers, may be handicapped, since the scurvy their poor diet may have induced and the "hemorrhagin" effects of the snake venom would combine to make both poisoning and scurvy worse.

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ASTRONOMY

Edge of Visible Universe

The 200-inch telescope can look three times farther into space than was thought possible when it was built, another revision of the distance scale shows.

► THE OUTERMOST edge of the visible universe seen through the giant 200-inch telescope atop Mount Palomar is probably three times farther away than was thought only a few years ago.

The astronomical age of the universe, that time in the past when all matter was at one place in space, may be closer to 6,000,000,000 years than the 2,000,000,000 years so recently believed.

The universe is apparently expanding at an even slower rate than has previously been thought. Its expansion, however, is the same in all directions.

Only two years ago, astronomers cut the astronomical yardstick for measuring the universe in half. (See SNL, Jan. 10, 1953, p. 19.) That change still holds for relatively close objects, such as star clusters within our Milky Way galaxy, or the distance to the Andromeda Nebula, a giant starry pinwheel believed to resemble the Milky Way.

For very distant objects, however, a further correction is required, Dr. Allan R. Sandage of Mt. Wilson and Palomar Observatories has suggested.

He told a joint meeting of the Astronomical Society of the Pacific and the astronomy section of the American Association for the Advancement of Science that recent photometric work at Mt. Wilson and Palomar Observatories and Lick Observatory suggested a change of three, not two, for far-away galaxies.

The same studies also suggested the change in the apparent universe expansion rate. It is now thought to be, Dr. Sandage said, about 108 miles per second per million parsecs, compared to 318 miles per second per million parsecs, the value adopted by the late Dr. Edwin Hubble in 1936.

A parsec is the distance that a beam of light, moving at light's speed of 186,000 miles per second, will cover in 3.26 years.

As far as is now known, Dr. Sandage pointed out, "all external galaxies in all directions of space are apparently receding from each other with speeds directly proportional to their distances."

An indicator of the distance to far-away galaxies and clusters of galaxies is the observed brightness of the objects. The more remote these "island universes," each composed of millions of stars and nebulae, the fainter they appear.

Recent measurements have shown that what were thought to be stars in some of these more distant galaxies are actually clouds of glowing hydrogen gas. They have also shown that the apparent magni-

tude scale is out of line when applied to very faint objects.

When measurements of the brightness of galaxies are combined with measurements of the puzzling "red-shifts" of these objects, astronomers have observations on which to test the expanding universe theory.

The "red-shift" is a displacement toward the red, or longer wave-length, end of the spectrum found in lines from the rainbow-like spectrum of light from distant heavenly objects.

Dr. Sandage reported that Dr. M. L. Humason, also of Mt. Wilson and Palomar Observatories, and Dr. N. U. Mayall of Lick Observatory, Mt. Hamilton, Calif., recently completed 20 years of research charting the "red-shifts" of nearly 800 galaxies beyond our own Milky Way.

The range of measurements now available, Dr. Sandage told the astronomers, covers nearby systems with nearly zero recessional speed to the extremely distant Hydra cluster with an apparent recessional speed of 36,000 miles a second, about one-fifth the speed of light.

The apparent brightness studies were made by Dr. Edison Pettit, another astronomer of Mt. Wilson and Palomar Observatories. This catalogue, combined with the red-shift measurements, for the first time, Dr. Sandage said, provides a basis for testing the expanding universe theory, first proposed by Dr. Hubble in 1929.

The question of the reality of this red-shift, Dr. Sandage said, is still to be solved. It could mean an actual receding velocity. On the other hand, it could mean that, because of some law of nature that is not now known, light loses energy, and thus becomes redder as it travels through space in the course of time.

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CHEMISTRY

Gasoline "Sweetening" Speeded by New Process

► FASTER "SWEETENING" of gasoline and cleaner auto engines may result from a new process reported by Drs. L. D. Rampino and M. J. Gorham at the meeting of the American Association for the Advancement of Science in Berkeley, Calif.

When gasoline is separated from petroleum, there are often offensive odors in the solution caused by sulfur compounds called



PHOTOGRAPHY OF SPEECH—This picture, combining X-ray and conventional photography on a single negative, is the result of a new motion-picture technique developed at the University of Rochester. It is used in clinical studies of the mechanism of speech.

mercaptans. They are among the vilest smelling substances known.

A common procedure to rid gasoline of these chemicals is to add an inhibitor and caustic, and then age the mixture before the gas is sold.

The scientists studied the sweetening process for the Tide Water Associated Oil Co. at Associated, Calif., and came up with a new process. They propose adding a small amount of a sodium and lead oxide compound, called doctor solution, to the gasoline-caustic solution and injecting air to the mixture.

This, they said, would not only speed the reaction that destroys the mercaptans, but it would also reduce the amount of peroxides formed. Peroxides, they found, produce a substance in gasoline that dirties engines.

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PSYCHOLOGY

Girls as Bright as Men On Mechanical Problems

► WOMEN ARE just as clever as men in solving a mechanical problem such as locating a defect in a gear train, a report to the American Association for the Advancement of Science meeting in Berkeley, Calif., indicated.

However, worry in either a man or a woman does make a difference in solving the problem, Dr. Edmund V. Mech of the University of Oklahoma, and Drs. Nicholas A. Fattu and Ervin Kapos of Indiana University, have found.

Individuals who are less anxious, they found, are the ones who have the advantage in finding correct solutions to the gear train problem.

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PSYCHOLOGY

Teen-Age Sex Hysteria

► TEEN-AGE TROUBLES, ranging from increased numbers of illegitimate babies to attempted suicides by girls unhappy over the size and shape of their bosoms, was blamed on sex hysteria "which is a calculated instrument of modern journalism and so-called entertainment trends."

The charge came from Dr. Goodrich C. Schauffer of Portland, Ore. Speaking at the Sixth American Congress on Obstetrics and Gynecology in Chicago, he also blamed the teen-agers' difficulties on "increasingly loose practices, bad examples and lack of supervision in parental and home influences; liquor, narcotics, automobiles, auto courts; and finally the gang influences which combine these elements and tend, in certain groups, almost to enforce premarital sex practices."

He reported that anomalies of the breast in childhood and adolescence are seen often.

"These call for more attention from the physician in the present age because of ac-

GENERAL SCIENCE

Interlingua Written

► DOZENS OF people in many different countries have learned to write Interlingua, the world language, even though no classes in this language have yet been offered in any school.

A survey of correspondence at the offices of the Interlingua Division of Science Service in New York shows that in the last 18 months letters written in Interlingua have been received from 64 persons in 15 countries.

Dr. Alexander Gode and Hugh E. Blair, who are introducing Interlingua into world-wide use, explain that many of these writers of Interlingua attained their proficiency without use of textbooks.

A free information kit is sent out by the Interlingua Division, 80 E. 11th St., New York, upon request. It contains specimens of the language and grammatical rules that allow a person to write the language, which is based on existing languages of the western world.

A newspaper man who had received a copy of "Interlingua a Prime Vista," the book that gives a picture introduction to Interlingua, wrote a review of the book in excellent Interlingua. An editor in Venezuela who had received the information kit wrote an article on Interlingua for a newspaper in Caracas. The article included a long passage in Interlingua which he wrote himself. As a result many people in Venezuela became interested in the language.

A physicist in Chicago has taught himself Interlingua and uses it to publish an internationally circulated technical bulletin on his specialty, molecular spectroscopy. Bulle-

tins are also published in France and Denmark by people who have taught themselves Interlingua.

Though comparatively few have tried their hand at writing Interlingua, thousands have found that they read it with ease. Millions who have not yet tried it have linguistic backgrounds that enable them to understand it the first time they see it.

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celerated sex trends contingent upon Hollywood influences and the insane emphasis by modern advertising and the press upon this semirespectable sex appendage. The array of bosoms now available to the naked eye is simply appalling, and it has its results early and late," he told doctors attending the Congress.

Girls scarcely into adolescence already are subject to a bosom inferiority complex and are wearing miniature "falsies," Dr. Schauffer said.

"This is a rather peculiar modern intellectual distortion which cannot be dismissed easily," he stated. "As physicians, we must under no circumstances disregard the psychic, I may even say the psychotic, influence of such matters upon our youngsters. It can easily be serious. Recently, in my own practice, I have had one attempted suicide and several serious and total derangements contingent upon real or fancied breast irregularities."

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VITAL STATISTICS

Surgical Mortality Cut

► **MORTALITY** FROM major surgical operations has been cut by at least one half and, in several instances, by more than four-fifths in the past 10 years, figures from nine hospitals in different cities show. The figures have been compiled by statisticians of the Metropolitan Life Insurance Company in New York.

The operations covered in the report were removal of part or all of the stomach in ulcer and cancer patients, removal of the gallbladder, major amputation in diabetic gangrene, removal of the uterus, and Caesarean section for childbirth.

Hospitals where the operations were performed were three Chicago hospitals, the Mayo Clinic in Rochester, Minn., the Lahey Clinic, Boston, the New England Deaconess Hospital, Boston, Cook County Hospital, Chicago, Bronx Hospital, New York, and Millard Fillmore Hospital, Buffalo.

The record is all the more remarkable, the statisticians point out in their report,

because in recent years many more older patients have been operated on. For example, persons aged 50 or older constituted more than half the patients operated on in three Chicago hospitals in recent years, whereas less than 20 years ago the proportion over 50 was one-third.

The "long-range outlook" for patients who recover from major operations is also satisfactory.

This achievement is attributed by the statisticians to "the better training of surgeons, advances in surgical techniques, and the wide use of the newer chemotherapeutic and antibiotic agents to control infection. Surgical patients have also benefited substantially from improved anesthetic substances and procedures, as well as from better preoperative preparation and post-operative care. Blood transfusion has been used increasingly to prevent death from surgical shock.

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TECHNOLOGY

Electronics-Age Metal

► **GERMANIUM**, THE electronics-age metal that has made transistors possible, has been found in the ash of Kansas coal.

The results of preliminary spectrographic investigation of 24 samples of ash taken from Kansas coal showed that the germanium content ranged from 0.0036 to 0.0680% in the ash and from 0.00069 to 0.00480% in the total coal.

Using the price of germanium at \$295 per pound, as it was in February, 1954, John A. Schleicher and William W. Hambleton of the University of Kansas determined that the germanium content of the Kansas coal was worth from \$4.06 per ton of coal to \$28.40 per ton.

One sample, which contained 21.8 ounces of germanium per ton of ash, was valued at \$401.20 per ton of ash, if no germanium were lost in the processing. The scientists stated that this compared favorably with both present domestic and foreign sources of the metal.

The chief source of domestic germanium has been from the distillation of some residues derived from the smelting of zinc ores. In Germany, England and Japan, there are several plants already in operation that recover the metal from the fly-ash and residual ash of coal.

There has been some question in the past as to the practicability of getting germanium from coal because thicker veins of eastern coal showed low concentrations of the metal. However, the Kansas scientists pointed out that the Kansas coal seams are much thinner and that this might be a factor in the high concentration found in the study.

The U. S. Department of Interior Geological Survey is planning to conduct further investigation of the germanium found in the Kansas coal next spring.

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PUBLIC SAFETY

Urge Training Device to Teach Students to Drive

► **USE OF** an auto trainer for teaching high school boys and girls how to drive was urged by a group of scientists of the Driving Research Laboratory, Iowa State College, at the meeting of the American Association for the Advancement of Science in Berkeley, Calif.

The recommendation was based on study of the performance of contestants in the National Road-e-o in Washington, D. C., and that of 150 students at Iowa State College. The National Road-e-o tested ability of the contestant to maneuver a car in difficult situations.

About one-eighth of high-school students in the United States are now receiving automobile driving instruction. The usual plan is to teach the boys and girls in small classes of four students, spending much of the time in an automobile.

The system has been found to work out better for girl students than for boys. It has been criticized as spending too much time in teaching the fundamental skills of working pedals, levers, wheels and buttons, with not enough attention being given to the advanced stages of what emergency action to take to avoid an accident, or how

to manipulate the automobile so as not to create a traffic hazard.

Use of an auto trainer that would simulate actual driving conditions, the scientists explained, would permit the development of "defensive thinking" with respect to traffic accident situations.

The Iowa scientists reporting the study are Drs. A. R. Lauer, Earl Allgaier, Elmer B. Siebrecht and Virtus W. Suhr.

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METALLURGY

Study Metal Failure In Deep Oil Drilling

► **THE PROBLEM** of why metals fail during the drilling of very deep, high-pressure oil wells may soon be solved by a study being conducted by the Yale University department of metallurgy.

Under the direction of Prof. William D. Robertson, associate professor of metallurgy, the research project involves a study of the decomposition of alloys now used in drilling caused by the hydrogen sulfide found in oil wells.

"Because wells are now being drilled 10,000 to 15,000 feet deep, alloy steels must be used to withstand the terrific pressure," stated Prof. Robertson. "But drilling companies have discovered that these alloy steels react chemically to sulfur and to hydrogen sulfide, the gas emitted by underground sulfur deposits. The result is that after a few weeks' use, the casings fail, and must be replaced."

It is hoped that the study, which is being conducted under a research grant from the National Association of Corrosion Engineers, will find an answer either in terms of a new alloy, or a neutralizing agent for present alloys, that could save the petroleum industry millions of dollars annually, the metallurgist reported.

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ENTOMOLOGY

Red-Legged Widow Makes Speech Difficult

► **A RED-LEGGED** widow spider whose poison causes speech difficulties, aching shoulders and tightness in the chest was introduced by Dr. Ernest R. Tinkham, desert naturalist of Indio, Calif., to the first International Conference on Animal Venoms meeting with the American Association for the Advancement of Science in Berkeley, Calif.

The red-legged widow spider has abdominal markings like the male black widow spider, but the legs and cephalothorax are reddish brown.

The venom of the Gila monster, *Heloderma*, is "extremely poisonous," Dr. Tinkham said. He pointed out that the toxicity of this venom is the subject of much controversy, but reported his own case of being poisoned by a fraction of a drop of the *Heloderma* venom.

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METEOROLOGY

1954 Weather Reviewed

Heat and drought marked last year's weather, which, as a whole, was similar to 1953. First half of year saw monthly seesaw of mild and cold weather.

► THE WEATHER during 1954 in the United States was marked by heat and drought, some areas in the southern half of the country being seared for the third or fourth straight year.

As a whole, weather for the year was somewhat similar to 1953, the U. S. Weather Bureau told SCIENCE SERVICE.

After a monthly seesaw of mild and cold weather from January through May, hot dry weather set in over the same regions that have been suffering drought conditions for the past three or four years.

During February and March, parts of Colorado, Oklahoma, Kansas and Texas suffered the most severe duststorms since the 1930's. Soil erosion was an ever-present menace in the old Dustbowl area.

Intense heat for long periods during the summer and fall in central and southeastern portions of the country aggravated the conditions caused by lack of rainfall.

At the end of August, Little Rock, Ark., had recorded 43 days with temperatures of 100 degrees Fahrenheit or over, and only 23% of normal rainfall.

On the other hand, on Jan. 20, the low temperature record for the United States was broken when Rogers Pass, Mont., recorded 69 degrees below zero Fahrenheit. The previous record, 66 degrees below zero, was set on Feb. 9, 1933, at Riverdale Ranger Station in Yellowstone National Park.

Tornadoes struck again in March of last year at Columbus and Macon, Ga. Eight persons were killed, 95 injured and \$14,000,000 in property damage was suffered in this area, much of it at Fort Benning.

In all, losses from spring storms amounted to nearly 100 dead, 600 injured and a loss of \$50,000,000 in property and crop damage.

Four hurricanes hit the U. S. during 1954. Hurricane "Alice" produced the greatest flood on the Rio Grande and Pecos River in written history.

Near the end of the summer, two hurricanes in 11 days swept across New England. Hurricane "Carol" on Aug. 30-31 was the more destructive, leaving 68 dead and over \$450,000,000 in damage, mostly in Rhode Island and Massachusetts.

On Sept. 10-11, hurricane "Edna" followed almost the same path, although this time Maine was hardest hit. At least 12 deaths were attributed to the tropical storm.

On Oct. 15, hurricane "Hazel" cut a path of destruction from the South Carolina coast to Ontario. Damage from wind, rain and resulting floods exceeded \$500,000,000. Nearly 200 persons were killed by the storm. The storm had previously roared across Haiti, taking a heavy death toll there.

Other highlights from the Weather Bureau's summary of 1954 weather month-by-month:

January—Temperatures for the country as a whole averaged about normal, but from the 14th to the 27th, northern areas had unusually cold weather.

February—An unusually mild February brought an extremely early ice break-up in northern rivers and lakes, and vegetation began to show signs of spring. Subnormal rainfall and warm temperatures, combined with strong winds, rapidly dried out fields and pastures, resulting in many severe duststorms.

March—Precipitation was below average again in an unusually cold March. Strong winds eroded the soil, reducing visibility to one-sixteenth of a mile at times in the lower Great Plains area. Brown snow, colored by the dust of the Plains, fell in Michigan. A snowstorm left the heaviest snowfall in the area of Liberty, Miss., since 1895.

April—The weather turned warm over most of the country early in April, after a brief cold spell during which below zero temperatures were recorded in the North. Tornadoes and windstorms were responsible for over \$2,000,000 loss in property and crop damage.

May—Cold weather ushered in by storms at the end of April hung on during most of May east of the Continental Divide. Snowfall was widespread in northern sections and freezing extended into the South, average temperatures there being the lowest since 1917. Storms left 47 dead, 164 injured and damage of \$12,000,000, more than half caused by hail and tornadoes. There were 102 tornadoes in various parts of the country.

June—In addition to drought and flood damage, June storms were responsible for 52 deaths, 187 injuries and \$30,000,000 in property and crop losses.

July—The heat which began in early June persisted over most of the nation east of the Continental Divide through all of July. Temperatures of 100 degrees Fahrenheit and higher occurred day after day in the central interior of the country.

August—A short break in the heat wave was followed by a quick return to hot weather in the South and Southeast, making the summer one of the hottest and driest on record from Kansas, Oklahoma and Texas eastward to the coast. Hurricane "Carol" tore into New England along much the same path as the hurricane of September, 1938.

September—Ten days after hurricane "Carol," Edna appeared on the scene and

again New England was subjected to devastating winds and rain. The rest of the country remained dry and hot. At the end of September, rainfall for the year to date was far behind normal in a large area.

October—Moderate to heavy rains fell at the beginning of October from the upper Mississippi Valley eastward, doing much to relieve surface features of the drought. Hurricane "Hazel" hit the East Coast and Canada. Chicago and its immediate vicinity was deluged with up to 11 inches of rain in 48 hours on Oct. 9-11.

November—Temperatures were considerably below normal in the eastern half of the country at the beginning of the month, but gradually warmed up until, during the third week of November, the entire country except central California reported above normal averages.

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GLACIOLOGY

Western Glaciers Found Growing, Not Receding

► GLACIERS in the western part of the United States are growing, not receding, Dr. A. E. Harrison of the University of Washington reported to the American Association for the Advancement of Science meeting in Berkeley, Calif.

Photogrammetry, a precise form of three-dimensional photography applied to surveying, was used to make the measurements showing glacier growth, Dr. Harrison said. Conventional surveying methods, he pointed out, are "too laborious and do not provide sufficient information" for solving the problems involved in glacier behavior.

Interest in measuring glaciers in the western states has been intense since the discovery ten years ago that some of these large ice bodies were reversing the expected trend of shrinkage and recession.

The "most spectacular growth," Dr. Harrison said, has occurred in the Cascade Range of Washington, particularly on the volcanic peaks. The new trend is evident throughout the western states.

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GENERAL SCIENCE

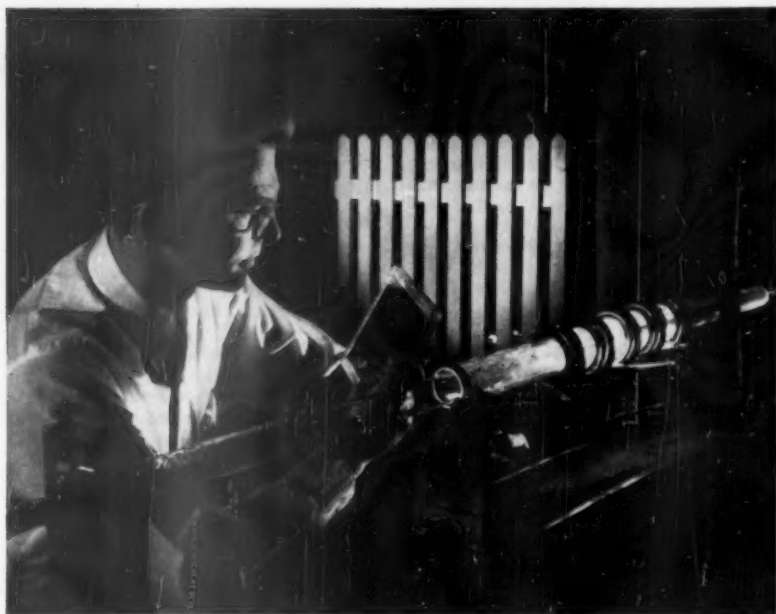
Lifetime Grants Seen Threat to Research

► "LIFETIME GRANTS" to scientists starting their research careers may destroy the freedom of research scientists desire and may create a scientific manpower shortage in the future.

These possibilities are pointed out by John M. Russell, executive director and vice president of the Markle Fund, in the fund's annual report.

Recipients of the lifetime grants may lead such an "ivory tower" existence that they are unavailable for teaching and stimulating young people who might become the scientists of the future, Mr. Russell points out.

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HIGH PURITY SILICON—Dr. Hubbard Horn of the General Electric Research Laboratory, Schenectady, N. Y., is shown here demonstrating the "zone melting" process for production of high purity silicon. The method consists of successive recrystallizations of silicon as an ingot is slowly drawn through a gas-filled quartz tube.

TECHNOLOGY

Highly Pure Silicon

► **SILICON**, ABUNDANT non-metallic element, has now been isolated in what is believed to be its purest form to date.

The General Electric Research Laboratory, Schenectady, N. Y., has produced the crystals in a long, gas-filled quartz tube by the same method used in germanium refinement.

Purity of the element was measured in terms of "lifetime," or the time it takes for an excess of electrons injected into the crystals to disappear. For usual silicon this takes only a few ten-thousandths of a second or less, but the new crystals have a lifetime of more than a thousandth of a second.

Silicon is believed to be more efficient than germanium in transistors, which are versatile substitutes for radio tubes. Germanium begins to lose some of its valuable properties at temperatures above 200 degrees Fahrenheit, while silicon transistors work above 400 degrees.

The scientists used the "zone melting" process to purify the silicon. An ingot of high-quality silicon was drawn through a long, gas-filled quartz tube. Induction coils melted the element in narrow zones. Impurities remained in the high temperature zone and were swept to the end of the tube, leaving the purified silicon.

The GE scientists said they would try

for even greater silicon purity, which they hope will permit electronic controls that have been impossible to achieve so far. High purity, they point out, would allow a transistor to conduct electrons with a minimum of capture by imperfections.

Science News Letter, January 1, 1955

PLANT PHYSIOLOGY

Six Ears on One Stalk Goal of New Corn Study

► **CORN** MAY some day be available that will regularly produce six or seven ears on each stalk.

Dr. Ernest B. Earley of the University of Illinois College of Agriculture has begun a study of just how corn can be made to produce more than one or two ears per stalk.

In his investigations to date, the Illinois plant physiologist has found that there is an unknown factor in corn strains that causes them regularly to produce either one or two ears. He has also found that the blocking off of the point at which one ear is beginning to develop, causes the stalk to produce an ear at another point.

Multiple ear production on one stalk of corn is the aim of the project.

Science News Letter, January 1, 1955

WILDLIFE

Operation Billy Goat Successfully Completed

► **ANOTHER** "OPERATION Billy Goat" was acclaimed a victory when a successful airborne invasion of Chichagof Island, about 100 miles to the southwest of Juneau, Alaska, was made by four mountain goats.

Stocking goats on Chichagof Island is one of the series of game transplants being carried on by the U. S. Fish and Wildlife Service. When the two nannies and the two billies were uncrated after a 700-mile journey from the mainland shores of southeast Alaska to Chichagof Island, they brought to seven the total number of mountain goats so far liberated on the Island.

The Service reported that mountain goats transplanted on Baranof Island many years ago have increased in numbers to such an extent that there has been an open hunting season on them for several years.

Science News Letter, January 1, 1955

TECHNOLOGY

Acid Obtained From Low Grade Sulfur Deposits

► **A PROCESS** for extracting sulfur economically from low grade deposits was described at the meeting of the American Institute of Chemical Engineers in New York. The system would insure a continuous and economical supply of the important yellow element.

In the process, finely ground, low-grade sulfur is roasted at up to 1,600 degrees Fahrenheit in cylindrical reactors 25 feet high and 18 feet in diameter. A stream of air is fed through the molten ore. The sulfur dioxide gas produced, using ore with as low as 20% to 30% sulfur content, can be used to produce 450 tons of sulfuric acid a day.

The process was reported by R. B. Thompson and Donald MacAskill of Dorr Company, Stamford, Conn.

Science News Letter, January 1, 1955

TECHNOLOGY

Farm Tractor Can Generate Electricity

► **A TRACTOR** with a built-in electricity generator is now being tested by the U. S. Department of Agriculture.

International Harvester and General Electric, which cooperated in developing the device, say that it can supply normal and emergency power for almost any farm motor. The 30-ampere, 110-220 volt generator could be used when power lines are stormed out to keep milk coolers and lights going. It could also be used as a source of power in the field where electric lines do not reach.

The machine is described in the Department of Agriculture's *Agricultural Research* (Dec.).

Science News Letter, January 1, 1955

ENGINEERING

Average Water Cooler Drink Is Six Seconds

► THE AVERAGE length of drinks from a bubble-type water cooler is six seconds, and the average person consumes less than a half pint in an hour during the summer months.

This was one of the conclusions of a study by P. R. Achenbach and C. W. Phillips of 16 water fountains in the Washington, D. C., area that they reported to the American Society of Refrigerating Engineers meeting in Philadelphia.

Concealed movie cameras triggered by the fountain foot pedals were used in the experiments. Water coolers in such places as a bus terminal, an air conditioned office building, an army dormitory, a hospital mess hall, a technical school and a snack bar were studied.

Other conclusions were:

1. The average water usage per person per hour ranges from one-fifth to three-tenths of a quart in hot weather when there is ready access to the cooler and the persons are engaged in relatively light work.

2. The average hourly consumption was below the ten-gallon-per-hour capacity prescribed by the Bureau of Standards for coolers.

3. The ratio of the number of drinks in 15 minutes to the number of persons served approached 100% for the Marine Corps school.

The paper suggested that perhaps the Bureau of Standards regulation is based on too high an estimate. If the capacity of coolers could be lowered, cheaper fountains could be produced, the scientists said.

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PSYCHIATRY

Blames Female Ailments On Psychic Conflicts

► MANY A woman's so-called female ailments, ranging from pain and excessive functional bleeding to false pregnancy symptoms, are caused by emotional conflicts the woman had as a small child, Dr. Mary E. Giffin, psychiatrist at the Mayo Clinic and Mayo Foundation, Rochester, Minn., told the Sixth American Congress on Obstetrics and Gynecology in Chicago.

Emotional experiences in children that are both confusing and constructive form the basis on which all subsequent interpersonal relationships are developed, Dr. Giffin said.

"During the first three years, it is the relationship with the mother which is of primary significance. Without a truly loving relationship with a mother during these years, there is never proper integration of subsequent experiences," she explained.

"During the ages of four and five, the girl is testing out the very rudimentary sexual feelings toward her father, with the mother as a benevolent competitor. The girl who is comfortable with her mother

identifies herself constructively with her. This psychologic process, combined with biologic factors, permits a growing heterosexual orientation, on which pubertal factors can act.

"However, if the mother has been neurotically overprotective, or rejecting, the girl is not free to explore her feelings toward her father. In such an instance, the neurotic relationship between mother and father is equally frustrating."

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MEDICINE

Cortisone May Be Useful Against Tropical Diseases

► CERTAIN DISEASES of tropical countries caused by parasites may respond to treatment by cortisone, Dr. Edward K. Markell of the Medical School of the University of California at Los Angeles has said.

His report is based on an investigation of the use of cortisone in treatment of elephantiasis in Tahiti. This is an advanced form of the parasite-caused disease, filariasis, and is characterized by enormously swollen tissue. It was found that cortisone eliminated or helped reduce the swelling in almost all patients.

Dr. Markell is going to Mexico to study use of cortisone against another tropical parasite-caused disease, onchocerciasis, a disease borne by the black gnat.

The disease results in formation of nodules over the body and inflammation of eye tissue, frequently leading to blindness. It is particularly prevalent in Mexico and Central America among coffee plantation workers. Infections run as high as 54% of the population in some areas of the tropics.

Because cortisone has been effective in treatment of other eye inflammations and in a similar parasite disease, Dr. Markell hopes it may be useful in treatment of onchocerciasis.

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GENERAL SCIENCE

No Time for Weary Retired Scientists

► THE SCIENTIST might just as well forget about developing hobbies to take up his leisure time after retirement.

His major problem in his later years, said Dr. Paul D. Foote, former vice president of Gulf Oil Corporation, is not to find ways to use his leisure time but to find a few spare minutes to himself.

"Merely reading the technical literature and catching up with the youngsters is a full time occupation, permitting no leisure whatever," he said. In addition, the retired scientist is hounded to take chairmanships of various government and civic committee activities, some of which he just cannot refuse, and others that are so interesting he will not refuse.

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IN SCIENCE

CHEMISTRY

Ammonia Can Be Used To Refine Petroleum

► LIQUID AMMONIA can be used to refine petroleum, Dr. Merrill R. Fenske of Pennsylvania State University told the meeting of the American Institute of Chemical Engineers in New York.

He said that the chemical, known to housewives as a cleaner, is a good solvent for some hydrocarbons and a poor one for others. Therefore, he said, it can be used to extract useful fractions from a mixture of hydrocarbons. Petroleum fresh from the ground is a complex mixture of carbon compounds that must be separated for use.

Dr. Fenske said that the new liquid ammonia process would permit the production of gasolines and other fuels with better ignition qualities. He also envisioned better lubricating oils and cheap methods of extracting specific petroleum fractions used to make plastics and synthetic fibers.

A further advantage of the process, he said, is that ammonia is relatively cheap.

Ammonia, a compound of nitrogen and hydrogen, is a gas in natural state, but under pressure can be converted to a liquid. Household ammonia is not this liquid, but a weak solution of the gas in water.

Dr. Fenske and his associates, R. H. McCormick, H. Lawroski and R. G. Geier cooperated in working out the ammonia process.

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VETERINARY MEDICINE

Atabrine Found as Cure For Canine Tapeworms

► DOGS SUFFERING from tape worm infections can be cured with the use of atabrine, skin-yellowing malaria remedy of World War II.

In preliminary studies, made at the University of Illinois, Drs. R. P. Link and Jean C. Smith of the college of veterinary medicine found that atabrine effectively purged infected dogs of two species of tapeworm.

The scientists reported in the *Journal of the American Veterinary Medical Association* (Dec.) that of 12 dogs treated, 91% were free of *Taenia pisiformis* and 85% were free of *Dipylidium caninum* within 23 days of the initial treatment.

However, the drug was not effective in curing the infection of two other parasites, *Ancylostoma caninum* and *Toxocara canis*, the Illinois veterinarians reported.

Previous findings by other scientists have shown that atabrine has been effective in ridding humans and mice of tapeworm infections.

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DE FIELDS

OCEANOGRAPHY

Scripps Institution Gets \$1,000,000 for Sea Study

► THE EVER-INCREASING seriousness of the world food problem may be solved by harvesting the oceans which cover seven-tenths of the globe.

To increase our knowledge and use of the biological productivity of the sea, the Scripps Institution of Oceanography has accepted a grant of \$1,000,000 from the Rockefeller Foundation, President Robert G. Sproul of the University of California has announced.

"The availability of this fund," President Sproul said, "will enable the Scripps Institution of the University of California to confirm and strengthen its position as a world leader in the exploration of the present and potential resources of the oceans of the earth to better meet the needs of an expanding world population."

The grant, which is to be expended over an eight-year period, will be used to strengthen present research projects, as well as to initiate new ones. The Institution will also add a visiting professorship and four resident professorships to its staff, in addition to several graduate and post-doctoral fellowships.

Dr. Roger Revelle, director of Scripps, which is located at La Jolla, Calif., stated that, in addition to making a "more intense research" to expand the harvest of the sea, which now represents only a little over one percent of our food supply, the grant would permit marine biology to catch up with other sciences.

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BIOCHEMISTRY

Find Enzyme That Controls Aging

► DISCOVERY OF what "appears to be the biochemical factor controlling aging" was announced by Drs. Arthur W. Galston and S. M. Siegel of California Institute of Technology, Pasadena, Calif., at the meeting of the American Association for the Advancement of Science in Berkeley, Calif.

The factor is an enzyme chemical, a peroxidase. The Caltech scientists made their discovery in work with plants but their results, they pointed out, "may have some general biological significance."

Applying the plant growth hormone, indoleacetic acid, to certain plant cells first results in the cells starting to grow.

"Second, the cells are induced to form a specific new enzyme, a peroxidase, which has the capacity in the presence of peroxide for destroying the growth hormone," the scientist reported.

"This new peroxidase appears to be the biochemical factor controlling aging, since by destroying growth hormone in the cell, it prevents further elongation."

"Third, in certain cells, the walls become impregnated with lignin. This lignification is also the result of the activity of the new peroxidase, since lignin is known to be formed by the action of peroxidase on certain hydroxyphenylpropane building blocks."

"Thus, the induced formation of peroxidase by the growth hormone appears to lead directly to cessation of growth and to differentiation of lignified elements."

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PHYSICS

Whirling Mirror Used To Track Jet Fuel Flow

► A WHIRLING mirror and a one-shot camera have enabled scientists to study the atomization of fuels in jet engines.

The technique, disclosed at the meeting of the American Institute of Chemical Engineers in New York, produces pictures of fuel sprays comparable to those of a movie camera taking 1,000,000,000 frames a second.

The results of the investigation can be used to increase the efficiency of fuel in supersonic flights. Path, shape and size of fuel particles were observed.

Dr. Robert D. Ingebo of the Lewis Flight Propulsion Laboratory of the National Advisory Committee for Aeronautics reported on the new photographic process.

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AERONAUTICS

Scientists Can Never Predict Airplane Life

► THERE WILL never be any accurate way to predict how long an aircraft will last before it gives in to fatigue failure. Bo Lundberg, director of the Aeronautical Research Institute of Sweden, told members of the Institute of Aeronautical Sciences meeting in Washington.

There will probably always be an error of several hundred percent, he said.

In the Wright Brothers lecture, he called on the larger countries, primarily the United States, to work out a program to lessen these difficulties. He said that fatigue in fixed-wing airplanes is a highly important matter that must be considered for all types of transport airplanes.

The accumulated effects of repeated, but mostly moderate, structural loads — normally gust loads — could sometimes cause failures of the primary structure before the airplane attains a reasonable service life.

Mr. Lundberg, who designed the Royal Swedish Air Force's J-22 fighter, is the first Swedish scientist ever invited to deliver the Wright Brothers lecture, for which American and foreign scientists are invited to speak in alternate years.

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BIOLOGY

Shrew Poison Fatal to Mice, Rabbits and Cats

► ADD TO the poisonous snakes, toads, scorpions, spiders and caterpillars of the world the short-tailed shrew, *Blarina brevicauda*.

The glands under the jaws of this animal contain a poison lethal to mice, rabbits and cats, Dr. Oliver P. Pearson of the University of California reported at the first International Conference on Animal Venoms held with the American Association for the Advancement of Science meeting in Berkeley, Calif.

"Injection of minute quantities of saline extract of these glands produces dramatic effects on respiration, pulse and blood pressure," Dr. Pearson reported.

"The poison seems to be produced in a distinctive, granule-filled segment of the submaxillary tubules and is used by these shrews when attacking mice. It has not been detected in several other species of shrews tested."

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HERPETOLOGY

Fear in Snake and Victim Makes Snakebite Worse

► FEAR IN the rattlesnake and fear in his victim will make the effects of his bite worse, Dr. Laurence M. Klauber of the San Diego (Calif.) Zoological Society declared at the first International Conference on Animal Venoms held with the meeting of the American Association for the Advancement of Science in Berkeley, Calif.

Extreme fear and apprehension will affect the victim's heart action and therefore the speed of venom absorption. The extent of anger or fear that motivates the snake plays its part, because the muscles that wring the venom glands and thus eject the venom are separately controlled from the biting mechanism, Dr. Klauber explained.

A snake that was not very scared might, according to this, bite without wringing its venom glands hard enough to eject much poison.

The age, size, vigor and health of the victim are important in determining his absorptive power and systematic resistance to the venom, Dr. Klauber said. So also are his "allergy complex," susceptibility to protein poisoning and partial immunity from previous snakebites or treatment.

The site of the bite is also important in determining the outcome. Bites in the extremities and in tissues where absorption will be slower because, for example, of fat, will be less dangerous than bites near vital organs or penetrating a blood vessel.

Young snakes are less dangerous because of their smaller size, shorter fangs and production of less venom which is less toxic. Snakes that have passed their prime also may secrete less venom and this of a reduced virulence.

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GENERAL SCIENCE

Science Forecast for 1955

Atomic submarine should make world's longest sea voyage. Military science still gets the largest play. Success of polio vaccine to be known.

See Front Cover

By WATSON DAVIS

► IN THE year 1955, the effort to apply science and technology to military purposes will still have the ascendancy. Much of the progress will be held secret, as in recent years.

There will continue to be more atomic test explosions, both in the U. S. and Soviet atomic energy programs. There will be rising fear of the consequences of both the increasing numbers of tests and the dangers of atomic warfare.

The U. S. "atoms-for-peace" program may get to the stage of an international meeting, but it will have to be held in Europe because of the difficulties in the way of getting, for many of the scientists, U. S. visas for entry into this country under the McCarran-Walters act. The era of somewhat hopeful communication with the Soviets may continue and be aided by these discussions if they are held. The limitation of atomic warfare will not be on agenda seriously. The promising fact is that the two atomic adversaries will be talking with each other.

First Atomic Submarine

Hidden in the dry-land atomic "submarine," located in the middle of Idaho and shown on the cover of this week's SCIENCE NEWS LETTER, is an experimental model of the engine that is expected to drive the world's first atomic submarine, U.S.S. Nautilus, on a record voyage in 1955.

It may make the longest continuous sea voyage in human history. More atomic submarines should approach completion, including in all probability one in the Soviet navy.

Larger, more accurate and longer-range guided missiles will come to fruition, but there will be little information issued on these military advances. Radar warning nets surrounding the United States and flung over Europe, the Far East and the Arctic will make America more secure from surprise attack by atomic bombers.

Work on some very practical atomic power plants, notably a relatively small one for emergency use by military and civil agencies, will be rushed, with some chance that one or more will be actually tested.

The generation of electricity directly from atomic radiation will continue in an experimental stage, although this may be the method of greatest promise in the

future. Solar batteries will have limited use, although such conversion of the sunlight into electric power is likely in the long run to be a more important energy source than uranium, thorium or lithium.

In medicine, there is always chance of a major sudden "break-through" on one of the unconquered diseases, like cancer, heart, etc. This might be a chemical that would stop cancer's unruly growth. For this to happen in 1955 should not be counted on.

The world should know during the coming months whether the polio vaccine given a mass test on children in 1954 is effective in lessening the frequency and severity of the disease.

By the same methods that were used in production of the polio vaccine, there may come a vaccine for measles. This may not get to the significant testing stage during 1955.

The many new antibiotics and other chemicals being produced with great hope should be watched for promise of treatments for diseases and conditions that are difficult to handle, or for better treatment of diseases under partial control.

Secret of Green Leaf

The secret of the green leaf, how photosynthesis is accomplished in nature, should come closer to solution in 1955, building on the knowledge gained in the past year or so. Much of what has been believed about the manner of the plant's capture of the sun's energy has proved to be wrong, but new methods tell a new story of what happens.

If this stands up and man can duplicate it, we shall have found the treasure trove of energy at the end of the rainbow. However, this may be too much to expect in one year or even several years.

Science will continue to struggle with the mystery of life itself. This is wrapped up with the wonders of growth and the grand pageant of evolution and heredity. Answers to such questions will require many years, if they are ever attained.

Important in this matter of life and its origin are the amino acids and complex molecules of protein. Theory and experiment will continue to explore these frontiers. Similar methods will be put to work to determine structure of such drugs as ACTH and the possibility of their synthesis.

While these fundamentals are being approached, those who have the great task of treating the mentally disturbed in our population have hope of advances in the future.

Drugs promise aid in psychiatric problems. The alkaloids, rauwolfia or Indian snake root, thorazine, LD25 and others have shown some usefulness. They may be employed both therapeutically and, quite as importantly, in increasing knowledge of the mental state of psychotics. In addition to these pharmacological approaches, the social sciences are being drawn upon to give assistance in mental hospitals where the human aspects are so important and helpful.

Some of the same drugs under test in mental treatment, such as rauwolfia, are also used in the treatment of hypertension or high blood pressure. Advances can be foreseen in this line of approach to one of the most prevalent of dangerous physical conditions.

Differences of Individuals

Individuals who make up the population are being studied as to their differences as well as their similarities. A continuing reappraisal of the nature and origin of individual differences in men, women and children should lead toward a better understanding of our democratic culture in theory and practice.

Long-continued studies of individuals from birth to grave will be begun as a means of understanding child development as well as the aging processes.

This is research that will of necessity span more than one generation of scientists, and planning to make this possible may be begun in coming months.

Just as it is necessary to know what happens to the individual, much can be learned from man's rise through the ages. A complete ecological picture of the rise of man from his cave-dwelling stage to his residence in open towns will emerge from the Oriental Institute expedition working in northeastern Iraq near the Iranian and Turkish frontiers.

There will be a search in the spring by a Peabody Museum-Harvard expedition to western Pakistan for stone age connections between the Iranian plateau and the Indus valley.

Archaeologists expect that more solar ships will be located on the other side of the Cheops Pyramid in Egypt. Inspection of their contents may throw new light on the life of that little known Pharaoh.

To archaeology and to geology of recent times, radiocarbon dating may be expected to bring more surprises as this new research tool is made more accurate and increased in scale and so straightens out the story of man's past.

The same kind of very sensitive radiation counting that is used in radio-carbon dating will be applied to studies of human metabolism to help diagnose incipient diseases.

More atomic radiation available for med-

ical therapy will result from a plant to be built during 1955 at Oak Ridge, Tenn., to extract from the wastes or "ashes" of atomic furnaces cesium 137, which gives off intense gamma rays. The 200,000 curies per year to be extracted will allow the use of this radioactive material for food preservation as well.

There should be expected some clarification of the properties of the fundamental subatomic particles that are called K-mesons or charged heavy mesons, which physicists admit now are "in a mess." The theoretical and experimental exploration of other subatomic entities will continue.

The great telescopes of the world will be improved by the use of image converters, similar to television methods. These will increase the speed of spectroscopic observations and decrease the exposure time for bright objects, such as the planets and granulations of the face of the sun.

There will be progress in understanding the evolution of the stars and the structure of the galaxies. The expanding universe will have new dimensions due to a revision of the constant which is dependent on brightness and velocity that will result from photometric measures of nebulae.

There may be progress in discovering the origin of the main magnetic field of the earth and also the cause of glaciations in the earth's past.

A giant electronic computer will go to work making numerical forecasts of weather.

In aviation, 1955 will see the inauguration of regular operation in the United States of turbo-prop airliners.

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ICHTHYOLOGY

Yearly Salmon Run

► SALMON FISHERMEN in the State of Washington may soon be catching pink salmon every year instead of every other year as is now the case. Attempts by Washington's Department of Fisheries to establish a run of pink salmon during even-numbered years have shown some promise.

"For the first time in history," stated C. H. Ellis, supervisor of the Department's hatchery management and research division, "even-year pink salmon have returned to Washington waters." Heretofore, pink salmon made their run only during odd-numbered years.

To establish the off-year run of pink salmon, the biologists obtained even-year spawn from Canada, but instead of liberating the fry just as they were ready to feed as was done in the past, they were reared in salt water until they attained a fair size.

In 1950, between 300 and 500 adult pink salmon reared in this manner returned to the Samish River. This group was allowed to spawn naturally and, in 1952, 50 adult fish returned. Again, the 50 fish were allowed to spawn naturally, but only a few returnees were observed this year. Pink

PSYCHOLOGY

Public School Curriculum

► PRESSURE GROUPS rather than either educators or parents determine what should be taught in the public schools—at least in California, Dr. George C. Kyte, professor of education at the University of California, found in a survey reported to the American Association for the Advancement of Science meeting in Berkeley, Calif.

Well meaning organizations have been responsible for having many requirements written into the state law, he found.

"Practical entomology" was made a requirement with the idea that this would help orchard growers in fighting insect pests in California's citrus groves.

The WCTU is behind the teaching of "evil effects of alcohol, tobacco and narcotics."

The Grand Army of the Republic pressed legislation to introduce teaching of "civil government."

The California Club urged the teaching of "humane education," and similar subjects.

The Native Sons and Native Daughters are responsible for the teaching of the "history of California."

"Fire prevention" was added to the curriculum at the insistence of public and private organizations.

The American Society for Thrift, the War Loan Organization and the bankers' association got behind the introduction of "thrift."

Only twice in the history of California have educators had a voice in school legislation. Once was when John Pelton, a Massachusetts schoolmaster who went to California in the gold rush, was given the job of writing the original bill. Even then, legislators tacked on two additional requirements. The other occasion was in 1925 when citizens and school officials got together to map out needed revision of the legislation.

Recent polls show that what the public wants its children to learn in school are the three R's, U. S. history, civics, geography, the U. S. Constitution and Declaration of Independence. Rated as almost as important are morals and manners, accident prevention and training for healthful living.

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INVENTIONS

U. S. Inventions Available Royalty-Free

► A PROCESS to extract rubber from a shrub and a ceramic anti-corrosion coating for metals are among the 308 government-owned patents available on a royalty-free license.

The inventions are printed in the last volume of a seven-booklet series, compiled by the Government Patents Board, which lists over 4,300 such patents. Since these inventions were developed with public funds, they are considered the property of the people. The patents are licensed on a non-exclusive basis.

Short descriptions of each invention are included in the booklet titled, "Ceramic, Paper, Rubber, Textile, Wood and Other Products and Processes" (see SNL, Dec. 11, p. 380).

The ceramic coating process protects critical metal parts from corrosion at temperatures up to 1,800 degrees Fahrenheit. Bombers' heat exchangers treated with this coating lasted up to 12 times longer than previously designed exchangers.

The rubber extracting process, developed by the Department of Agriculture, gives up to 95% yield from the guayule shrub.

Each of the booklets, which can be bought from the Department of Commerce, Washington, contains the patents of possible interest to a specific phase of U. S. industry.

The other volumes are "Instrumentation" (see SNL, Aug. 21, p. 124), "Chemical Products and Processes," "Food Products and Processes" (see SNL, Nov. 6, p. 300), "Metal Products and Processes" (see SNL, Nov. 13, p. 316), "Machinery and Transportation Equipment," "Ordnance" (see SNL, Nov. 27, p. 348) and "Electrical and Electronic Apparatus" (see SNL, Dec. 11, p. 380).

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salmon go out and return in two-year cycles. Each fish lives through only one such cycle.

"From this procedure, it became quite evident that a single generation transfer could be accomplished on the first return, but would fail to maintain itself under natural conditions," reported Mr. Ellis.

Consequently, the Washington fisheries experts have taken the eggs from another even-year planting, and these will be reared and planted from the two salt-water stations established in Washington in recent years.

Mr. Ellis pointed out that "all of the work to date has been entirely in the experimental phase, but we believe it holds some promise with a refinement in technique of developing a group with stronger homing instincts."

The establishment of an even-year run in Washington's waters, like that now enjoyed by fishermen in Canada and most of Alaska, will be more than welcomed by the Northwest fishing industry.

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The average hen lays 180 eggs a year.

Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

ANNUAL REPORT 1953-1954: Comprising the Reports of the President, the Secretary, the Comptroller, and other Administrative Officers—L. A. DuBridge, president—*California Institute of Technology*, 155 p., paper, free upon request to publisher, Pasadena, Calif.

ANNUAL REPORT TO THE BOARD OF TRUSTEES 1953-54—Henry Chauncey, president—*Educational Testing Service*, 135 p., paper, free upon request to publisher, 20 Nassau Street, Princeton, N. J. Urging better use of our intellectual resources and stressing the need to uncover high-level scientific talent.

APPLIED GEOPHYSICS: In the Search for Minerals—By the late A. S. Eve and D. A. Keys—*Cambridge University Press*, 4th ed., 382 p., illus., \$7.50. Use of the most modern instruments is described and special attention is given to methods of locating radioactive ores.

CHILDREN'S SOCIAL VALUES: An Action Research Study—Arthur W. Foshay, Kenneth D. Wann and associates—*Teachers College, Columbia University*, 323 p., \$3.50. Report of a cooperative study conducted in Springfield, Mo.

CONCISE DICTIONARY OF AMERICAN GRAMMAR AND USAGE—Robert C. Whitford and James R. Foster, Eds.—*Philosophical Library*, 168 p., \$4.50. An alphabetical listing of words, the correct use of which is sometimes confusing, and terms representing the basic elements of grammar.

FACTS OF LIFE FOR CHILDREN—Adie Suchsdorf—*Bobbs-Merrill*, 96 p., illus., \$2.75. To help parents in answering the questions of their children, whether they are pre-school youngsters or approaching adulthood. Based on research of the Child Study Association.

FROM CLASSICAL TO MODERN CHEMISTRY: Some Historical Sketches—A. J. Berry—*Cambridge University Press*, 251 p., \$4.75. Although intended for the "serious student," the treatment is nevertheless elementary.

THE HISTORY AND CONQUEST OF COMMON DISEASES—Walter R. Bett, Ed.—*University of Oklahoma Press*, 334 p., \$4.00. A book by prominent medical specialists intended primarily for patients.

THE MATHEMATICAL PRACTITIONERS OF TUDOR AND STUART ENGLAND—E. G. R. Taylor—*Cambridge University Press*, 443 p., illus., \$9.50. Devoted to those lesser men whose work created the climate in which great scientific advances were made possible.

PATHOGENESIS OF CANCER—John E. Gregory—*Fremont*, 2d ed., 202 p., illus., \$7.50. Intended to stimulate the search for a virus cause of cancer and an antibiotic remedy.

PROJECTS IN METAL FOR THE HOME AND SCHOOL SHOP—James F. Lincoln *Arc Welding Foundation*, 79 p., illus., paper, 50 cents. Telling the do-it-yourself enthusiast how to make a number of metal articles useful in home and yard.

STANDARD VALUES IN NUTRITION AND METABOLISM: Being the Second Fascicle of a Handbook of Biological Data—Errett C. Albritton, Ed.—*Saunders*, 380 p., illus., paper, \$6.50. Prepared under the direction of the Committee on the Handbook of Biological Data to present more basic established data in biological science.

TV FIELD SERVICE MANUAL WITH TUBE LO-

CATIONS: Volume 3—Harold Alsberg, Ed.—*Rider*, 121 p., illus., paper, \$2.10. To help the technician in locating and eliminating TV troubles.

TV MANUFACTURERS' RECEIVER TROUBLE CURES: Volume 6—Milton S. Snitzer, Ed.—*Rider*, 120 p., illus., paper, \$1.80. Here the manufacturers themselves provide the answers to some of the problems that may arise in their sets.

TELEVISION AND RADAR ENCYCLOPAEDIA—W. MacLanahan, Ed.—*Pitman*, 2d ed., 216 p., illus., \$6.00. A reference work explaining both British and American terms and practice.

THOSE OF THE FOREST—Wallace Byron Grange—*Flambeau*, 314 p., illus., \$4.75. Telling of the life of wild creatures.

YOUR CHILDREN'S FEET AND FOOTWEAR—Children's Bureau—*Govt. Printing Office*, 13 p., illus., paper, 10 cents. How to select shoes for children of different ages and how to keep children's feet healthy.

YOUR PREMATURE BABY—Joseph Dancis and Rose Spitz—*Govt. Printing Office*, Children's Bureau Folder Number 40—1954, 13 p., illus., paper, 10 cents. Explaining to parents the special care necessary for babies that weigh less than five pounds at birth.

Science News Letter, January 1, 1955

HERPETOLOGY

Annual Snakebite Toll

➤ BETWEEN 30,000 and 40,000 persons are killed annually throughout the world by snakebite, Dr. S. Swaroop and B. Grab, statisticians of the World Health Organization at Geneva, Switzerland, estimate.

They reported these figures at the first International Conference on Animal Venoms held in conjunction with the meeting of the American Association for the Advancement of Science in Berkeley, Calif.

The world snakebite death toll figures exclude the USSR, China and Central European countries, in all of which the death rate from this cause is not believed to be high.

The large majority of yearly snakebite deaths, 25,000 to 35,000, occur in countries of southern and southeastern Asia, followed by South America, with 3,000 to 4,000 deaths. In countries of North America, including Mexico, corresponding figures would seem to range between 300 and 500.

In countries of western Europe, annual snakebite deaths may be about 50, and in Oceania only about 10. For the African continent, no statistical basis is available for making even an approximate estimate. The presumption is that the annual total of snakebite deaths ranges between 400 and 1,000.

Of almost 2,500 reptile species known to exist in the world, less than 200 are dan-

PLANT PATHOLOGY

Combination Dust Protects Roses

➤ ROSES CAN be protected against injurious insects, mites and diseases all at once with a newly developed combination dust.

Progress on the development of a fungicide-miticide-insecticide dust, made by U. S. Department of Agriculture entomologists, was described to the Entomological Society of America meeting in Houston, Tex. The mixture promises effective control for spider mites, one of the worst rose pests, as well as both the black spot and mildew plant diseases.

The combined bug-disease killing dust includes 3.4% copper oxysulfate, 25% sulfur, the mite-killing Aramite, DDT and lindane. Tests showed that when the mites and black spot were controlled, the roses produced more flowers and foliage.

The dust also proved to be effective in protecting the roses against aphids and potato leafhoppers, but the entire combination was ineffective against the Japanese beetle and flower thrips.

The dust was developed by Dr. Floyd F. Smith and Edgar A. Taylor, entomologists, and W. D. McClellan, plant pathologist, at the Department's Agricultural Research Center, Beltsville, Md.

Science News Letter, January 1, 1955

gerous to man. These are distributed among the following families and sub-families:

1. *Viperinae*, or true vipers, found only in the Old World.

2. *Crotalidae*, or "pit vipers," found in the New World and in Asia.

3. *Elapidae*, represented by coral snakes and cobras, found in all the continents except Europe.

4. *Colubridae*, to which nearly two-thirds of the known species of snakes belong, but in which the only poisonous ones are some of the rear-fanged reptiles seldom found outside Africa.

5. *Hydrophidae*, or sea snakes, which are said to be so unobtrusive in their habits that they rarely conflict with man. They occur mostly near the coasts of southern Asia and northern Australia. One species has established itself on the west coast of Central America and on the eastern coast of Africa.

The fact that a particular poisonous species lives in a country does not necessarily mean that it is a risk to man, the WHO scientists pointed out. For example, even though the boomslang, or *Dispholidus typhus*, found in Africa has a very active venom, the reptile is timid and disappears into the bushes at the slightest alarm.

Science News Letter, January 1, 1955

ENGINEERING

Modules for Buildings

► ARCHITECTS ARE now taking a few pointers from Junior who builds his fortresses with blocks.

Houses of the future may all be built using a four-inch cube called a module as the structural "atom." It is estimated from structures already built with this method that industry would save billions of dollars a year by fully adopting the system.

In conventionally designed buildings, the architect draws the blueprints using feet, inches and fractions of inches. When construction begins, carpenters, plumbers and bricklayers have to cut and patch their non-standardized materials to make them fit.

The new system of modular measure would eliminate this waste of time and material by making use of building materials that are standardized to the four-inch cube. Thus, when the workers follow a blueprint scaled to the module all the parts would automatically fit.

Modular windows, for instance, would slip right into the opening of modularly scaled walls built of modular bricks.

The system was approved by the American Standards Association in 1945 and, since 1950, use of the method has steadily grown.

William Demarest Jr., modular coordinator of the American Institute of Architects in Washington, said that today 90% of all concrete blocks and all the glass blocks are made to modular measure.

For most efficient operation of the system; he said, all building materials would have to be manufactured to this four-inch cube measure, but there are advantages even if materials are off-size.

"The worst that would happen is that workers would have to cut and patch certain areas which they do now anyway," he said.

Mr. Demarest said that when the building industry has completed conversion to modular measure there will be a saving of billions of dollars a year in decrease of wasted materials and greater construction speed.

Contractors, builders and draftsmen met in Washington under the auspices of the Building Research Institute of the National Academy of Sciences to discuss methods of developing the system.

James Coombs, president of Baker and Coombs, Inc., general contractors in West Virginia, said that his firm had recently completed six large buildings using modular measure. He reported savings of up to 50% in time needed to cut materials, up to 35% in layout time, and savings up to 10% in cost of masonry labor.

The system was proposed in 1936 by Albert F. Bemis, a Boston industrialist, to standardize building procedure and to reduce the cost of housing.

Science News Letter, January 1, 1955

EVOLUTION

Evolution of Limbs

► ARMS AND legs may have come about in the evolutionary development of animals because fishes needed a more efficient means for digging into moist places to survive during hot, dry weather.

This possibility in explaining the reason for the original adaptive significance of the limb of four-legged animals or tetrapods, is reported in *Science* (Dec. 17).

Dr. Grace L. Orton of the Scripps Institution of Oceanography of the University of California states that, in particular, the foot, which has always been the most difficult part of the limb to account for, can be understood most easily if it is interpreted as originally a digging specialization.

The California zoologist reports that there is evidence to indicate that ancient fishes, especially during the Upper Devonian period about 300,000,000 years ago, would have found it an "inauspicious time" to emerge as land animals from aquatic animals.

"The prospective new environment would then be at its worst for such animals, and it would be much more likely to select adaptations that would permit more effective direct use of available water supplies," Dr. Orton states.

The development of the fin into a foot-like structure would permit the fishes to remain in contact with the retreating moisture during the Upper Devonian period, which was both a dry era and the time in which amphibians first appeared.

A digging limb would thus make it possible for the proamphibians to remain "in the vicinity of established seasonal water holes rather than wandering off into a hostile environment," the scientist states.

Heretofore, it has been usually thought that the tetrapod limb was an adaptive modification that was directly useful for land locomotion.

Science News Letter, January 1, 1955

CHEMISTRY

Natural Insecticide Found in Flower's Roots

► A HIGHLY pungent, natural insecticide has been derived from the roots of the American coneflower, which grows wild in Kansas, Nebraska and Missouri.

Designated echinacein, a description of the compound's isolation and its insecticidal qualities in tests with houseflies is reported

in *Science* (Dec. 17) by Martin Jacobson of the U. S. Department of Agriculture's entomology research branch, Beltsville, Md.

The entomologist stated that the echinacein possessed moderate insecticidal activity, along with the characteristics of pungency found in a number of other insecticidal unsaturated isobutylamides derived from natural sources.

An accidental contact of a trace of the new compound, which was formed into acids through permanganate oxidation, caused a burn on the skin of the hand that blistered and then peeled after two days.

Because the echinacein is highly unstable, attempts to identify it further failed. However, Mr. Jacobson reported that the pungent natural insecticide may be identical with another compound derived from the bark of the Herculesclub, sometimes called the toothache tree.

A small amount of the new compound, when placed on the tongue, causes a numbing effect.

Science News Letter, January 1, 1955

ENGINEERING

Longer Car Fronts May Decrease Crash Deaths

► CAR DESIGNERS might decrease the death toll from head-on collisions by putting trunk space behind the engine.

This was one of the conclusions of tests, conducted by University of California scientists, in which cars with dummy drivers were smashed into a reinforced log barrier. Results were recorded by instruments in the car and by a slow motion movie camera aimed at the collision point.

The experiments, which are reported by the Highway Research Board in "Highway Accidents and Related Factors," showed that less than one-third of the initial jolt was absorbed by the car frame. Under severe impacts the auto responds as a somewhat flexible structure.

Putting more car structure between the front bumper and the driver might increase the absorption of the impact, the report said.

The tests were run by D. M. Severy and J. H. Mathewson of the University of California engineering department.

Science News Letter, January 1, 1955

REFRESHER COURSE IN MATHEMATICS

By F. J. CAMM

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MEDICINE

Epilepsy Death Reports Wrong by Nearly 100%

► **EPILEPSY DEATH** reports are almost 100% too high. The total epileptic deaths in one state, Wisconsin, are actually less than one per 1,000 deaths instead of the two per 1,000 shown by death reports, Drs. Edward D. Schwade and Owen Otto of Milwaukee, Wis., found in an analysis of Wisconsin State Board of Health mortality figures.

In this state and presumably others, many deaths attributed to epilepsy are the result of accident or some other illness, the two doctors point out in the *Journal of the American Medical Association* (Dec. 18).

The Wisconsin statistics showed that 70 deaths, of an annual total of 34,839, were attributed to epilepsy, or about two per 1,000 deaths. However, an analysis indicated that 44 of the cases were caused by lung, heart and circulatory disease, or a variety of other conditions, including influenza and rheumatoid arthritis.

The two physicians said this would cut the total of "epileptic deaths" to 26, or less than one per 1,000 deaths.

A number of these, they said, were accidental deaths following seizures, such as falls and drownings, and could be prevented by careful guidance. Only 14 of 70 deaths actually occurred during status epilepticus (a series of rapid convulsions between which there are no periods of consciousness).

Science News Letter, January 1, 1955

FORESTRY

Red Trees, 100% U. S., Worked Over in Russia

► **PURE**, 100% American trees, that ironically are already red, are now being subjected to Russian scientific experimentation.

The giant American redwood is being hybridized and transplanted by Russian foresters and botanists.

In *Voks* (Sept.-Oct.), the bulletin of the U.S.S.R. Society for Cultural Relations with Foreign Countries, the Russians report that "one can already see three-year-old sequoias around Moscow."

They go on to state that this original native of North America is being grown for planting by the U.S.S.R. Forestry Research Institute and, at the same time, the Institute is conducting research in the hybridization of the giant tree, crossing it with larch, cypress and others.

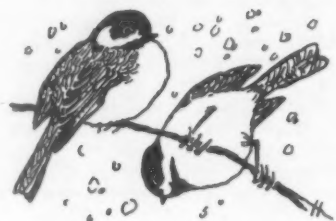
Apparently, the first redwoods were brought to Russia in the 1860's but in "tsarist Russia," the article states, they were grown exclusively to decorate parks on the southern coast of the Crimea and the Caucasus.

Now, however, Soviet scientists have tried introducing the sequoia into the forests of the Crimea and other parts of the Soviet Union.

Science News Letter, January 1, 1955

ORNITHOLOGY

NATURE RAMBLINGS



Snowbirds

► **WHEN ICICLES** hang from their tail-feathers, the tiny tumbling birds of winter are in their element.

Let the big, honking geese, the toothsome mallard, the strutting robin fly far to the south to palmlands under tropical suns. Snowbirds do not flee the wintry blasts. They revel in blizzards, sing in sleet, sweep snow-covered fields in open defiance of the coldest weather.

The name snowbird has been applied rather indiscriminately to a large number of small winter birds of gray, brown and white. Sparrows and finches, chickadees

and nuthatches stay with us from the time of red leaves until the first white flowers of spring.

From polar islands north of Alaska and Hudson Bay come the snow buntings, or snowflakes, to haunt snow-swept hillsides or bleak and ice-covered shores.

Wherever are cool summers and freezing winters, there are slate-colored juncos, true birds of winter and one of the most common sparrows in America.

These hardy Vikings will spend the coldest months of the year flying over white-coated fields and lawns or clinging to weed stalks which stick up through the snow.

It is the weed stalks which give clue to the snowbirds' presence. Without such remnants of harvest crop and garden, ditches and field-corners, the birds could not live through the winter.

Their appetites are highly beneficial to the farmer, for they consume vast quantities of weed seeds. They also gobble harmful insects, eating caterpillars by the droves. The amazing acrobatics of the nuthatch and chickadee are performed as they search inch by inch over bark and twigs for the sleeping eggs and pupae of the next summer's borers and biters.

Any and all snowbirds are glad for occasional human assistance, however, in warding off winter's hunger. Crumbs from feast-day tables or lumps of suet are banquets for them.

Given an occasional helping hand when the snow is deep and even the thermometer shivers, the little snowbirds will ride your outdoor Christmas trees all winter.

Science News Letter, January 1, 1955

AERONAUTICS

Preventing Fuel Fires

► **A GAS** tank that is expected to save many airplane crash victims from a fiery death has passed its first public tests before officials of the Civil Aeronautics Administration, rubber companies and the press.

The tank, which is made of tough, rubberized nylon, is designed not to rupture and spew forth its contents at high crash speeds.

In the tests, the cell, filled with water and encased in an airplane wing section, is hurled at a sandbag barricade. A Navy Mark IV catapult, used on aircraft carriers to launch planes, shoots the missile at the barrier.

High-speed cameras and pressure-sensing devices inside the cell record the results.

The tests, conducted at Weir Cook Municipal Airport, Indianapolis, Ind., were designed to show that the tank can withstand direct impacts of up to 75 miles an hour.

"Adoption of the cell will mean the saving of many lives in commercial and military flying," said Dr. H. J. Osterhof, director of research for the Goodyear Tire and Rubber Co., which, along with the CAA and the U. S. Rubber Co., developed the tank.

When a plane plunges into the ground, passengers who survive the impact are often killed when fuel flowing from torn gas tanks catches fire and explodes. The new fuel cell would remain intact during many of these crashes, thus preventing fires from this source.

Dr. Osterhof explained that fire is the greatest hazard in many accidents that occur at take-offs and landings.

The tanks are expected to be ready for production by June and should find immediate use in civilian and military aircraft.

During an earlier phase of the experiments scientists doubted that a sufficiently light, rupture-resistant material could be developed. They tried rubberized rayon, cotton and glass fabrics, then finally settled on nylon.

The cell bodies range in weight from one-tenth to six-tenths of a pound per square foot. Ordinarily, sturdier cells are needed in the wing section nearest the fuselage, while lighter tanks can be used near the wing tip. The tanks are designed to remain intact in a crashing plane until enough force is built up to rip the wing off.

Science News Letter, January 1, 1955

LINGUISTICS

Urge Oral Reading

➤ ALL CHILDREN could learn to read in a single school term if only our alphabet were perfect and our system of spelling phonetic, Miss Nellie N. Neal, Los Angeles educator, told the meeting of the American Association for the Advancement of Science in Berkeley, Calif.

This fact was shown, she said, when an ideal alphabet was constructed for the Tarascan Indians of Mexico. The whole tribe became completely literate in their own language in three months.

As it is, she said, English is bilingual. It is spoken one way and written quite another.

"We doo not rit az we spek," Miss Neal writes in her report. "The child iz konfuzed and duz not lik to be laft at hwen he pronounces wurdz fonetikalli. Ingglisch iz lik French. Meni leterz ar just for seneri."

The way should be paved for silent reading of bilingual English by periods of oral reading and drill on the pronunciation of new words, Miss Neal indicated.

This is not the modern trend. Many ex-

perts now insist that silent reading should precede oral reading and, in some schools, oral reading is no longer provided.

Words are introduced to children on "look and do" charts. In one first grade class, when the words "laugh out loud" were presented, all the children stretched out flat in their seats. When asked what they were told to do, they replied "lay out long." The first word was more phonetically correct than laugh. Then the children had misread the third word to make it fit into the context.

When school children meet unfamiliar words in silent reading, errors do not creep in, Miss Neal declared; they are stampeding the schools.

When the way for silent reading is paved by removing word-blocks by eye training and oral reading, children will have time to read enough so the repetition of new words will incorporate them into the child's speaking and reading vocabularies. Thus many children will do three school terms of reading in one.

Science News Letter, January 1, 1955

CHEMISTRY

Sulfur-Contaminated Oil

➤ MANY OF the undesirable sulfur compounds found in petroleum deposits have been identified for the first time, it was reported at the meeting of the American Association for the Advancement of Science in Berkeley, Calif., by Harold M. Smith, petroleum chemist of the U. S. Bureau of Mines at Bartlesville, Okla.

At present, refiners of high-sulfur oil are removing or deactivating these unwanted chemicals by methods developed through trial and error. The new data will permit more efficient separating processes which will mean cheaper and better petroleum products for the consumer.

Forty-three sulfur compounds in the gasoline boiling range alone were separated and tagged in the American Petroleum Research Institute project, which has spent five years on the study.

Laboratory separation of the compounds was achieved by a combination of selective adsorption, chemical isolation and distilling techniques.

The first step was to concentrate the sample by evaporation. In general, the sulfur compounds were then separated by percolating the residue through alumina, which preferentially captures the sulfur compounds. Other substances such as zinc chloride and alcohol were used in later steps, along with thermal diffusion of the heated gases.

Identification was accomplished by such processes as infra-red analysis and mass spectrography.

Three fractions of high-sulfur petroleum from Wesson Field, Texas, were investigated. It was found that the lowest boiling phase, 38 to 111 degrees Centigrade, contained few sulfur compounds. The second cut, 111 to 150 degrees, contained 43 such compounds. In the last fraction, 150 to 220 degrees, many different kinds of sulfur compounds were discovered, consisting mainly of thiophenes with condensed aromatic rings.

Science News Letter, January 1, 1955

PUBLIC HEALTH

Urges More Research To Fight and Use Venoms

➤ SNAKE VENOMS that kill an estimated 30,000 to 50,000 yearly should be studied more thoroughly, both to find better ways to protect snakebite victims and to find better ways to use venoms in disease treatment.

The "commanding challenge" of venom research was outlined by Dr. C. B. Pollard of the University of Florida, Gainesville, Fla., at the first International Conference on Animal Venoms held with the American Association for the Advancement of Science meeting in Berkeley, Calif.

Many of the early proposed methods of treatment for snakebite are not only ineffective but may be harmful, Dr. Pollard declared. He and associates in Florida, where the diamondback rattlesnake is plentiful, believe that all venomous bites should have

first aid treatment and prompt medical attention. In cases of serious diamondback bites, the following procedures, he said, have "given good results":

"Cruxation of fang wounds; application of suction; minimum physical activity of victim; application of tourniquet at nearest one-bone level between bite and body (the tourniquet should be released about one minute out of each 15-minute period); prompt attention of physician, hospitalization; prompt and prolonged application of ice-packs to large area, entire arm or leg; early administration of Antivenin (5 ampuls); early blood transfusions; tetanus-gas gangrene antitoxin; antibiotics; glucose-saline infusions; Benadryl; close and continued observation by attending physician.

"The limited number of patients who have received the above treatment have experienced practically no necrosis of tissue."

Science News Letter, January 1, 1955

Questions

EVOLUTION—What may have been the reason for development of arms and legs? p. 13.

□ □ □

GENERAL SCIENCE—What may be effect on scientists of lifetime grants? p. 6.

□ □ □

HERPETOLOGY—How does fear make a snake bite worse? p. 9.

What is the world's annual snake bite toll? p. 12.

□ □ □

ENGINEERING—What is the average length of drinks from a bubble-type water cooler? p. 8.

□ □ □

VITAL STATISTICS—By what percentage have surgical mortalities been cut? p. 5.

□ □ □

Photographs: Cover, Atomic Energy Commission; p. 3, University of Rochester; p. 7, General Electric Research Laboratory; p. 16, Power-Caddy Inc.



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❁ **MOISTURE DETECTOR** to determine the relative subsoil moisture content provides an instantaneous reading at any point down to 14 inches below ground level. Adjustable for the soil condition of a particular area, the probe weighs only one pound, 11 ounces and operates electrically by batteries.

Science News Letter, January 1, 1955

❁ **INK REFILL** is contained in the hollow of the pen-cap of a new fountain pen that carries its own extra supply of ink. The cartridge, which is transparent and airtight, comes into position automatically when the cap of the pen is withdrawn. A flip of the pen lever delivers the extra ink to the writing tip.

Science News Letter, January 1, 1955

❁ **PORTABLE STOVE** for camping, picnicking, or cottage and trailer use has a disposable liquefied petroleum fuel tank. Assembled in a matter of seconds, the stove packs into an 11 by 5½ by 5½ metal case, which also serves as an adjustable wind-shield. No pumping, priming or warm-up is required, even in sub-zero temperatures.

Science News Letter, January 1, 1955

❁ **MECHANIZED CADDY** is a battery-powered golf bag totter, shown in the pho-



tograph. It features special gears to help pull the golfer up steep hills, as well as easing him down rugged grades. A handy handle switch stops and starts the device, and a speed selector paces the caddy to the individual's walking speed. Pneumatic tires and over-all light weight protect the turf.

Science News Letter, January 1, 1955

❁ **FOOD STORAGE UNIT**, made of plastic, can be used as a deep cake- and bread-keeper, food crisper, dishpan or all-around kitchen storage utensil. Lightweight and flexible, this large container is easily cleaned and will not shatter or smash when dropped or handled roughly.

Science News Letter, January 1, 1955

❁ **HOT DOG FILLER** first removes the center of an ordinary frankfurter and then fills it with just the right amount of cheese or other food. It is made of tubular aluminum and a plastic plunger.

Science News Letter, January 1, 1955

❁ **LIGHT CONTROL** permits the homeowner to vary the light intensity of lamps and lighting fixtures to any degree, from complete darkness to full brightness. Described as the thermostat of lighting, the unit is a 360-watt variable autotransformer operating from a 120-volt AC source and installed like conventional light switches.

Science News Letter, January 1, 1955

❁ **INFLATABLE BOLSTERS**, made of plastic, are easily cleaned by wiping with a damp cloth. The bolsters, when inflated, measure eight inches in diameter and are available in 54-, 36-, and 24-inch lengths. When not in use, they can be deflated, folded and stored.

Science News Letter, January 1, 1955

A FEW MEMBERSHIPS ARE NOW AVAILABLE

in *Things* of science for 1955

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1-1-5

Do You Know?

It takes 800,000 gallons of water to grow an acre of cotton.

The mullet is said to be the only fish rich enough to fry in its own fat.

A modern transport airplane contains 16 miles of insulated electric wire.

When frightened, the *springbok*, a timid, antelope-like animal, has been known to leap 12 or 13 feet in the air.

The fastest game fish is the sailfish which has been clocked taking out 100 yards of line in three seconds, nearly 70 miles per hour.

Despite extreme drought in many areas in 1953 there was an 18% decrease in the number of forest fires compared to the previous year, 1952.

Children born with a *cleft palate* have a good chance to speak normally if they undergo an operation when they are from 18 months to two years old.